

**ROBUST SUMMARIES FOR TOXICITY TESTING ON
PETROLEUM OXIDATES AND DERIVATIVES THEREOF**

201-16395B

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	-31.0 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316A: Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

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Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	33.6 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758A; Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.

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Results:	38.9 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS157210; Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt
CAS#	68425-34-3
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	49.9 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166885; Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	38.0 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166886; Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Remarks	
Method:	

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Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	41.8 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166882: Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Melting Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, barium salts
CAS#	68603-10-1
Remarks	
Method:	
Method/Guideline followed	OECD 102
Test Type	Melting point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Differential Scanning Calorimetry (DSC) as described in ASTM E 794-98 was used to determine Melting point.
Results:	42.9 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166881: Determination of Melting Point/Melting Range Following OECD Guideline 102; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	91 to 450 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316A: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc.,

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Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	201 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758A: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	214 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS157210: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt

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CAS#	68425-34-3
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	352 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166885: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	204 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166886: Determination of the Boiling Point/Boiling Ranges Following OECD Guidline 103; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point

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GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	193 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166882: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc., 4/19/02

Physical/Chemical Property - Boiling Point	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, barium salts
CAS#	68603-10-1
Remarks	
Method:	
Method/Guideline followed	ASTM D6352-98
Test Type	Boiling Point
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	ASTM D6352-98 Standard Test Method for Boiling Range Distribution of Petroleum Distillates in Boiling Range from 174 to 700 deg C by GC was used in place of the atmospheric distillation method outlined in OECD 103 due to wide boiling range of test material.
Results:	193 to >700 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166881: Determination of the Boiling Point/Boiling Ranges Following OECD Guideline 103; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.

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Results:	69 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316A: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	<1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758A: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	<1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS157210: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt
CAS#	68425-34-3
Remarks	
Method:	

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Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	< 1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166885: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	<1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166886: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	<1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166882: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

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Physical/Chemical Property – Vapor Pressure	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, barium salts
CAS#	68603-10-1
Remarks	
Method:	
Method/Guideline followed	OECD 104
Test Type	Vapor Pressure
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Vapor pressure was calculated using partial pressure summation adaptation based on the boiling point range determined by the method ASTM D6352-98.
Results:	<1 Pa at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166881: Determination of the Vapor Pressure Following OECD Guideline 104; Envantage Inc., 4/19/02

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the raw material, light petroleum distillate is 3.3 to 7.06. The petroleum oxidate in subcategory 1 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be 3.3 to 7.06.
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	ASTDR. 1995. Toxicological Profile for Fuel Oils. Atlanta, GA; US Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6

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Remarks	
Method:	
Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt
CAS#	68425-34-3
Remarks	
Method:	

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Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Method:	
Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Method:	
Remarks	Octanol water partition coefficient could not be measured for

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	this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property – Partition Coefficient	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, barium salts
CAS#	68603-10-1
Remarks	
Method:	
Remarks	Octanol water partition coefficient could not be measured for this material because it is a class 2 substance that contains a mixture of hydrophilic and hydrophobic materials. The hydrophilic acids partitioned into the water phase while the hydrophobic, aliphatic hydrocarbons and methyl esters partitioned into the octanol phase giving a distorted value for octanol water partition coefficient. The calculated octanol water coefficient for the starting raw materials petrolatum and slack wax have a calculated partition coefficient greater than 4.9 This petroleum oxidate in subcategory 2 is expected to have a similar octanol partition coefficient to the starting raw material.
Results:	Estimated to be greater than 4.9
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	The Petroleum HPV Testing Group. 2002. High Production Volume (HPV) Chemical Challenge Program. Test Plan-Waxes and Related Materials Category.

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water Solubility

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GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	59.336 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316A: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water Solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	1.248 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758A: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	3.47 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS157210: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt
CAS#	68425-34-3
Remarks	
Method:	

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Method/Guideline followed	OECD 105
Test Type	Water Solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	0.346 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166885: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water Solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	0.537 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166886: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property - Water Solubility	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water Solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	1.287 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166882: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Physical/Chemical Property – Water Solubility	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters,

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	barium salts
CAS#	68603-10-1
Remarks	
Method:	
Method/Guideline followed	OECD 105
Test Type	Water Solubility
GLP (Y/N)	N
Year (Study Performed)	2001 - 2002
Remarks	Shake flask method
Results:	0.550 ppm at 25 C
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS166881: Determination of the Water Solubility Following OECD Guideline 105; Envantage Inc., 4/19/02

Environmental Fate - Photodegradation

Test Substance:																					
Chemical Name	Petroleum oxidate components																				
CAS#																					
Remarks	Various components in the category																				
Method:																					
Type	EPIWIN (The Atmospheric Oxidation Potential (AOPWIN) module was used)																				
Year	2006																				
Remarks	The members of the petroleum oxidate category typically have low vapor pressures however volatilization of some lower molecular weight components exhibit relatively high atmospheric oxidation half-lives. Atmospheric oxidation half-lives were calculated for various molecular weight and isomeric structures representing constituent hydrocarbons in this category. The estimates shown indicate that if volatile components of the petroleum oxidate category enter the troposphere, these compounds will undergo moderate to rapid photodegradation and not persist in the air.																				
Results:																					
<div>Half Life values (days) $1.5 \times 10^6 \text{ OH}^- \text{ cm}^3$ Number of C atoms</div> <table><tr><td>Chemical</td><td>C11</td><td>C20</td><td>C39</td></tr><tr><td>Alkane</td><td>0.854</td><td>0.424</td><td>0.205</td></tr><tr><td>Carboxylic acids</td><td>0.850</td><td>0.423</td><td>0.211</td></tr><tr><td>Ketones</td><td>0.77</td><td>0.403</td><td>0.200</td></tr><tr><td>Methyl Esters</td><td>1.032</td><td>0.463</td><td>0.220</td></tr></table>		Chemical	C11	C20	C39	Alkane	0.854	0.424	0.205	Carboxylic acids	0.850	0.423	0.211	Ketones	0.77	0.403	0.200	Methyl Esters	1.032	0.463	0.220
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Carboxylic acids	0.850	0.423	0.211																		
Ketones	0.77	0.403	0.200																		
Methyl Esters	1.032	0.463	0.220																		
Data Quality:	Reliable with restrictions – Klimisch code 2																				
References:	EPIWIN. Estimation programs interface for Windows V 3.12 Syracuse Research Corporation,, Syracuse, NY, USA																				

ROBUST SUMMARIES FOR TOXICITY TESTING ON
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Environmental Fate - Hydrolysis	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which

**ROBUST SUMMARIES FOR TOXICITY TESTING ON
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	an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis

Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized, calcium salt
CAS#	68425-34-3
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis

Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters
CAS#	68602-85-7
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore

ROBUST SUMMARIES FOR TOXICITY TESTING ON
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	hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis

Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Hydrolysis

Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, barium salts
CAS#	68603-10-1
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

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Environmental Fate - Hydrolysis	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, sodium salts
CAS#	68603-12-3
Remarks	
Method:	
Remarks	Hydrolysis of a chemical is a transformation process in which an organic chemical reacts with water, forms a new carbon oxygen bond, and cleaves a carbon - X bond in the original molecule, where X is the leaving group. Chemicals that have the potential to hydrolyze include alkyl halides, amides, carbamates, carboxylic acid esters and lactones, epoxides, phosphate esters, and sulfonic acid esters. Materials in the "Petroleum Oxidate and Derivatives Thereof" category do not contain hydrolyzable functional groups therefore hydrolysis if any is expected to be slow.
Results:	Hydrolysis is expected to be slow.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	Neely, W.B. 1985. Hydrolysis. In: W.B. Neely and G.E. Blau, eds. Environmental Exposure from Chemicals. Vol 1., pp. 157-173. CRC Press, Boca Raton, FL, USA.

Environmental Fate - Fugacity					
Test Substance:					
Chemical Name		Petroleum oxidate components			
CAS#					
Remarks		Various components in the category			
Method:					
Type		EPIWIN – EQC (Equilibrium Criterion Model, Level III)			
Media		Soil, air, water, and sediment			
Year		2006			
Remarks		Fugacity based computer modeling indicates that the majority of the components in this category will be distributed in the soil and sediment. The physical properties input are those calculated by EPIWIN. The default assumptions were used when performing the fugacity estimates.			
Results:					
		Air	Percent Distribution		
			Water	Soil	Sediment
Alkanes					
	C11	4.14	15	35.4	45.4
	C20	0.344	3.74	27.8	68.1
	C39	0.056	1.84	30.5	67.6
Carboxylic acids					
	C11	2.51	25.2	67.3	5.06

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	C20	0.34	3.74	27.8	68.1
	C39	0.057	1.83	30.5	67.6
	Ketones				
	C11	1.73	20.9	74.2	3.23
	C20	0.331	3.77	28.1	67.8
	C39	0.037	1.34	32.2	66.4
	Methyl Esters				
	C11	2.96	14.9	77.5	4.67
	C20	0.369	3.74	28	67.9
	C39	0.288	3.7	28.6	67.4
Data Quality:	Reliable with restrictions – Klimisch code 2				
References:	EPIWIN. Estimation programs interface for Windows V 3.12 Syracuse Research Corporation., Syracuse, NY, USA				

Environmental Fate - Biodegradation	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Purity	100% commercial product
Remarks	
Method:	
Method/Guideline	OECD Guideline 301F
Test Type	aerobic
GLP (Y/N)	Y
Year	2003
Contact time	28 days
Inoculum	Sewage sludge micro-organisms from domestic wastewater treatment plant
Remarks field for test conditions	<p>Inoculum: Sewage sludge microorganisms from the final effluent stage of the Severn Trent Water Plc sewage treatment plant at Loughborough, Leicestershire, UK, which treats predominantly domestic sewage.</p> <p>The test material at a concentration of 100 mg/l was exposed to sewage sludge microorganisms with culture medium in sealed culture vessels in the dark at 21 +/- 0.4 C for 28 days. The degradation of the test material was assessed by the measurement of daily oxygen consumption values on Days 0 to 28. Control solution with inoculum and the standard material, aniline, together with a toxicity control were used for validation purposes.</p>
Results:	48% degradation after 28 days, calculated from the oxygen consumption values.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS188513: Assessment of Ready Biodegradability;

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	Manometric Respirometry Test; Safepharm Laboratories October 19, 2003.
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Environmental Fate - Biodegradation	
Test Substance:	
Chemical Name	Distillates (petroleum), oxidized light
CAS#	64742-98-9
Purity	100 % commercial product
Remarks	
Method:	
Method/Guideline	OECD Guideline 301F
Test Type	aerobic
GLP (Y/N)	Y
Year	2003
Contact time	28 days
Inoculum	Sewage sludge micro-organisms from domestic wastewater treatment plant
Remarks field for test conditions	Inoculum: Sewage sludge microorganisms from the final effluent stage of the Severn Trent Water Plc sewage treatment plant at Loughborough, Leicestershire, UK, which treats predominantly domestic sewage. The test material at a concentration of 100 mg/l was exposed to sewage sludge microorganisms with culture medium in sealed culture vessels in the dark at 21 +/- 0.4 C for 28 days. The degradation of the test material was assessed by the measurement of daily oxygen consumption values on Days 0 to 28. Control solution with inoculum and the standard material, aniline, together with a toxicity control were used for validation purposes.
Results:	59% degradation after 28 days, calculated from the oxygen consumption values.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316B: Assessment of Ready Biodegradability; Manometric Respirometry Test; Safepharm Laboratories October 19, 2003.

Environmental Fate - Biodegradation	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Purity	100 % commercial product
Remarks	
Method:	
Method/Guideline	OECD Guideline 301F
Test Type	aerobic
GLP (Y/N)	Y

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Year	2003
Contact time	
Inoculum	Sewage sludge micro-organisms
Remarks field for test conditions	<p>Inoculum: Sewage sludge microorganisms from the final effluent stage of the Severn Trent Water Plc sewage treatment plant at Loughborough, Leicestershire, UK, which treats predominantly domestic sewage.</p> <p>The test material at a concentration of 100 mg/l was exposed to sewage sludge microorganisms with culture medium in sealed culture vessels in the dark at 21 +/- 0.4 C for 28 days. The degradation of the test material was assessed by the measurement of daily oxygen consumption values on Days 0 to 28. Control solutions with inoculum and the standard material, aniline, together with a toxicity control were used for validation purposes.</p>
Results:	55% degradation after 28 days, calculated from the oxygen consumption values.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758B: Assessment of Ready Biodegradability; Manometric Respirometry Test; Safepharm Laboratories October 19, 2003.

Acute Toxicity - Fish	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 203
Test Type	Water accommodated fraction
GLP (Y/N)	N
Year (Study Performed)	1999
Species/Strain/Supplier	Rainbow trout (<i>Oncorhynchus mykiss</i>)
Analytical Monitoring	None
Exposure Period (unit)	96 hours
Statistical Methods	Binomial
Remarks field for test conditions	<p>Test Organisms: Source – unknown; Age – unknown; Length – 5.0 cm +/- 1cm; Wet weight – unknown; Loading density – 0.95g/L; Pretreatment – none, fish were acclimated for 12 days in lab culture water.</p> <p>Test System: A water accommodated fraction test was conducted at concentrations of 625, 1250, 2500, 5000, and 10,000 mg/L.. The fish were not fed for 24 hours before nor during the test. The test was conducted in plastic-lined containers that contained 4 L of test solution. 7 fish were</p>

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	<p>used for each test concentration (no replicates were used). The test solution was aerated at 6.5 ml/min/L or 26ml/min/test volume. The test solution was maintained on a photoperiod of 16 hours light and 8 hours darkness.</p> <p>Preparation of test material: ASTM D6081-97 (modified) The test material was weighed and topped off with one liter of dechlorinated laboratory water, to achieve the desired highest test exposure load. The container holding the test item solution was mounted on an orbital shaker and covered with parafilm and shaken at 110 rpm for 24 hours before settling. After settling for 4 hours the WAF was dispensed from the top of the container. The WAF was then diluted with dechlorinated laboratory water to achieve the appropriate exposure load. The control of 100% laboratory water was prepared in a similar manner.</p> <p>Dilution water: Source – dechlorinated laboratory water; Hardness – Unknown; Analysis - unknown; Water chemistry in test: DO (mg/L) – 7-10; pH – 7.33 -8.23; specific conductance – 294-480umhos/cm.</p> <p>Test Temperature (C) - 15 +/- 2</p> <p>Test Levels: Control shaken and unshaken, 625, 1250, 2500, 5000 ,10,000 mg/L.</p>
Results:	96 hour LL50 = 3540 mg/L; 95% confidence interval = 2500-5000mg/L
Remarks:	Reference Substance: Potassium chloride Reference substance toxicity – LC50 = 4070mg/L with 95% confidence interval of 3590-4620 probit.
Conclusions:	96 hour LL = 3540 mg/L.
Data Quality:	Reliable with restrictions – Klimisch code 2
Data Quality Remarks:	Study is valid but is reliable with restrictions because it was not performed under GLP.
References:	96 hour Acute Lethality Test to Rainbow Trout (<i>Oncorhynchus mykiss</i>) on Alox 165 Batch 99491. Beak International test # 9900484-1; Beak International Incorporated, June 16, 1999.

Acute Toxicity - Fish	
Test Substance:	
Chemical Name	Distillates (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 203
Test Type	Static
GLP (Y/N)	Y
Year (Study Performed)	2004
Species/Strain/Supplier	Rainbow trout (<i>Oncorhynchus mykiss</i>)

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Analytical Monitoring	<p>The test material concentration in the test samples was determined by gas chromatography (GC) at 0, 24, 72, and 96 hours. Analysis of the WAF's at 0 and 72 hrs (fresh media) showed measured test concentrations to range from 1.16 to 12.8 mg/l. Analysis at 24 and 96 hrs (old media) showed measured test concentrations to range from 0.589 to 7.18 mg/l. There was a general decline in the measured concentrations over the duration of the test which was in-line with the pre-study stability analysis performed. The dissolved test material consisted of several components of the test material. The peak profile of the test WAF samples was significantly different from that of the standard. Therefore, it was considered inappropriate to calculate the results based on the measured concentrations of parent test material. Given that toxicity cannot be attributed to a single component or mixture of components but to the test material as a whole, the results were based on nominal loading rates.</p>
Exposure Period (unit)	96 hours
Statistical Methods	Spearman-Kärber method using the Tox Calc computer software package
Remarks field for test conditions	<p>Test Organisms: Source – Brow Well Fisheries Limited; Age – juvenile; Length – 4.1 cm; Mean weight – 0.68g; Loading density – 0.34g/L; Pretreatment – none, fish were acclimated for 12 days in a glass fibre tank with a single pass water renewal system.</p> <p>Test System:</p> <p>The test was performed using 5.6, 10, 18, 32, and 56 mg/l. Ten fish were placed into 20 liter glass exposure vessels at random in the test preparations. The test vessel were covered to reduce evaporation and maintained at approximately 14C in a temperature controlled room with a photoperiod of 16 hours light and 8 hours darkness with 20 minute dawn and dusk transition periods for a period of 96 hours. The test vessels were aerated via narrow bore glass tubes. The fish were not individually identified and received no food during exposure. A semi-static test regime was employed in the test involving a daily renewal of the test preparation to ensure test concentrations of soluble components of the test material were maintained over the test and to prevent build up of nitrogenous waste products. Any mortalities and sub-lethal effects of exposure were recorded at 3, 6, 24, 48, 72 and 96 hours after the start of exposure.</p> <p>Preparation of test material:</p> <p>Amounts of the test material were each separately added via syringe to the surface of 21 liters of dechlorinated tap water to give the 5.6, 10, 18, 32 and 56 mg/l loading rates. After addition of the test material, the dechlorinated tap water was stirred by magnetic stirrer using a stirring rate such that a vortex was formed to give a slight dimple at the water surface. They were stirred for 23 hours and the mixtures were allowed to stand for 1 hour. A wide bore glass tube,</p>

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	<p>covered at one end with parafilm was submerged into the vessel, sealed end down, to a depth of approximately 5 cm from the bottom of the vessel. A length of tygon tubing was inserted into the glass tube and pushed through the parafilm seal. The aqueous phase or water accommodated fraction (WAF) was removed by mid-depth siphoning (the first 75-100ml discarded) to give 5.6, 10, 18, 32 and 56 mg/l loading rate WAFs. Microscopic inspection of the WAF's showed no micro-dispersion or undissolved test material to be present.</p> <p>Dilution water: Source – Laboratory tap water that was dechlorinated by passage through and activated carbon filter and partly softened; Hardness – 100 mg/l as CaCO₃; Water chemistry in test: DO- 10 mg O₂/l; pH – 7.33 -8.23; specific conductance – 294-480umhos/cm.</p> <p>Test Temperature (C) - 14</p> <p>Test Levels: Control, 5.6, 10, 18, 32, and 56 mg/l.</p>
Results:	
Remarks:	The 96 hour LL50 based on nominal loading rates was 38 mg/l WAF with 95% confidence limits of 33-44 mg/l loading rate WAF. The No Observed Effect rate was 5.6 mg/l loading rate WAF. Analysis was performed using total peak area to calculate measure concentrations of test material since it is a complex mixture composed of several components. The recovery analysis of pre-study WAFs ranged from 21 to 25% nominal loading rate. The stability analysis performed showed a change in chromatographic profile of the stability samples compared to the standard response. This may have been due to the instability or insolubility in the test medium.
Conclusions:	96 hour LL50 = 38 mg/L. loading rate WAF with 95% confidence limits of 33-44 mg/l loading rate WAF. The No Observed Effect Loading rate was 5.6 mg/l loading rate WAF.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS 164316B; Acute Toxicity to Rainbow Trout (<i>Oncorhynchus mykiss</i>); Safepharm Laboratories May 21, 2004.

Acute Toxicity - Algae	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 201
Test Type	Static
GLP (Y/N)	N

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Year (Study Performed)	1999
Species/Strain/Supplier	Algae (<i>Selenastrum capricornutum</i>)/ UTCC 37 / In-house culture
Element basis	10,000 cells/mL
Analytical Monitoring	None
Exposure Period (unit)	72 hours
Statistical Methods	Moving average and Dunnett's test.
Remarks field for test conditions	<p>Test Organisms: Cells were taken from an in-house culture of <i>Selenastrum capricornutum</i> which originated from University of Toronto Culture Collection (UTCC). The organisms' age was 4-7 days (in exponential growth).</p> <p>Preparation of test material: ASTM D6081-97 (modified) The test material was weighed and topped off with one liter of growth medium, to achieve the desired highest test exposure load. The container holding the test item solution was mounted on an orbital shaker and covered with parafilm and shaken at 110 rpm for 24 hours before settling. After settling for 4 hours the WAF was dispensed from the top of the container. The WAF was then diluted with growth medium to achieve the appropriate exposure load. The control of 100% growth medium was prepared in a similar manner.</p> <p>Test Conditions: A water accommodated fraction test was conducted at concentrations of 156, 313, 625, 1250, 2500, 5000, and 10,000 mg/L.. The test was conducted in 125mL Erlenmeyer flasks that contained 50mL of test solution. The cell density was 10,000 cells/mL (after dilution from 1×10^6 inoculum). There were 3 replicates per concentration. The test solution was maintained on a continuous photoperiod with "cool white" fluorescent lighting at approximately 8,000 lux. Shaken and unshaken growth medium were included as controls in the test to account for any effects of the shaking procedure on algae growth. Algae cells were introduced into 50mL test solution to obtain a final cell density of 10,000 cells/mL. Every 24 hrs, a 1-mL sample was removed from each of the test replicates and cells were counted using a microscope and hemacytometer.</p> <p>Dilution water: Source – Filtered culture medium; Hardness – Unknown; Analysis - unknown; Water chemistry in test: DO (mg/L) –unknown ; pH – 6.40-10.09</p> <p>Test Temperature (C) – 23 +/- 2</p> <p>Test Levels: Control shaken and unshaken, 156, 313, 625, 1250, 2500, 5000 ,10,000 mg/L.</p>
Results:	<p>EL50 = 3860 mg/L with 95% confidence interval of 3600 – 4110 determined by moving average based data from 24, 48, and 72 hour.</p> <p>NOEL = 1250 mg/L calculated from 72 hour data using the Dunnett's test .</p>
Remarks:	<p>Reference Substance: Zinc Sulfate</p> <p>Reference substance toxicity – IC50 = 32ug/L</p>

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Conclusions:	
Data Quality:	Reliable with restrictions – Klimisch code 2
Data Quality Remarks:	Study is valid but is reliable with restrictions because it was not performed under GLP.
References:	72 hour Acute Algae growth Inhibition test on Alox 165 Batch 99491. Beak International test # 9900484-2; Beak International Incorporated, June 11, 1999.

Acute Toxicity - Algae	
Test Substance:	
Chemical Name	Distillates (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 201
Test Type	Static
GLP (Y/N)	Y
Year (Study Performed)	2004
Species/Strain/Supplier	Algae (<i>Scenedesmus subspicatus</i>)/ CCAP 276/20 / Culture Collection of Algae and Protozoa (CCAP), Institute of Freshwater Ecology, The Ferry House, Far Sawrey, Ambleside, Cumbria.
Element basis	10,000 cells/mL
Analytical Monitoring	The concentration and stability of the test material in the test solution was verified by GC analysis at 0 and 72 hours. Analysis of the test solutions at 0 and 72 hours showed measured test concentrations to decline over the duration of the test. Given that the toxicity cannot be attributed to a single component or mixture of components but to the test material as a whole, the results were based on nominal loading rates only.
Exposure Period (unit)	72 hours
Statistical Methods	Student t-test incorporating Bartlett's test for homogeneity
Remarks field for test conditions	<p>Test Organisms: Liquid cultures of <i>Scenedesmus subspicatus</i> were obtained from the culture collection of Algae and Protozoa (CCAP)</p> <p>Preparation of test material: Amounts of the test material (100 and 200 mg) were each separately dispensed onto the surface of 10 and 2 liters of culture medium using a plastic disposable syringe to give 10 and 100 mg/l loading rates. After addition of the test material, the culture medium was stirred by magnetic stirrer using a stirring rate such that a vortex was formed to give a slight dimple at the water surface. They were stirred for 23 hours and the mixtures were allowed to stand for 1 hour. A wide bore glass tube, covered at one end with parafilm was submerged into the vessel, sealed end down, to a depth of approximately 5 cm from the bottom of the vessel. A length of tygon tubing was</p>

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	<p>inserted into the glass tube and pushed through the parafilm seal. The aqueous phase or water accommodated fraction (WAF) was removed by mid-depth siphoning (the first 75-100ml discarded) to give 10 and 100 mg/l loading rate WAFs. Microscopic inspection of the WAF's showed no micro-dispersion or undissolved test material to be present.</p> <p>Test Conditions: The test was conducted in 250 ml conical flasks plugged with polyurethane foam bungs to reduce evaporation.</p> <p>A "limit test" was conducted at a single loading rate of 100 mg/l to confirm that no effect on algal growth was observed. The main test was performed using 6 flasks each containing 100 ml of the test preparation were used for the treatment group and three flasks for the control group.</p> <p>Pre-culture conditions gave an algal suspension in log phase growth characterized by a cell density of 4.24×10^6 cells per ml. This suspension was diluted to a cell density of 2.11×10^6 cells per ml prior to use. Inoculation of 2 liters of test medium with 10 ml of this algal suspension gave an initial cell density of 10^4 cells per ml and had no significant dilution effect. The flasks were plugged with polyurethane foam bungs and incubated at $24 \pm 1^\circ\text{C}$ under continuous illumination (intensity approximately 7000 lux) and constantly shaken at approximately 150 rpm for 72 hours. Samples were taken at 0, 24, 48, and 72 hour and the cell densities determined using a Coulter Multisizer Particle Counter.</p> <p>Dilution water: Source – Filtered culture medium; pH – 6.40-10.09</p> <p>Test Temperature ($^\circ\text{C}$) – 24 ± 1</p> <p>Test Levels: Control and 100 mg/l (6 replicates)</p>
Results:	<p>EL50 > 100 mg/L loading rate WAF for both biomass and specific growth.</p> <p>NOEL = 100 mg/l loading rate WAF</p>
	Remarks:
Conclusions:	No effects to algae growth or biomass was seen at the test concentration at 100 mg/L
Data Quality:	Reliable without restrictions– Klimisch code 1
References:	OS164316B: Algal Inhibition Test; Safepharm Laboratories; May 26, 2004.

Acute Toxicity -Invertebrate	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized, Me esters, calcium salts
CAS#	68603-11-2
Purity	100% commercial product.
Remarks	
Method:	

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Method/Guideline followed	OECD 202
Test Type	Static
GLP (Y/N)	N
Year (Study Performed)	1999
Species/Strain/Supplier	Daphnia magna
Analytical Monitoring	None
Exposure Period (unit)	48 hours
Statistical Methods	Binomial probability
Remarks field for test conditions	<p>Test Species: < 24hr old neonates</p> <p>Preparation of test material: ASTM D6081-97 (modified) The test material was weighed and topped off with one liter of dechlorinated laboratory water, to achieve the desired highest test exposure load. The container holding the test item solution was mounted on an orbital shaker and covered with parafilm and shaken at 110 rpm for 24 hours before settling. After settling for 4 hours the WAF was dispensed from the top of the container. The WAF was then diluted with dechlorinated laboratory water to achieve the appropriate exposure load. The control of 100% laboratory water was prepared in a similar manner.</p> <p>Test Conditions: A water accommodated fraction test was conducted at concentrations of 625, 1250, 2500, 5000, and 10,000 mg/L. The daphnia were not fed for during the test. The test was conducted in 120ml glass jars with a test volume of 75ml. 5 daphnia per chamber were used for each test concentration with 4 replicates per concentration. The test solution was not aerated during exposure period. The test solution was maintained on a photoperiod of 16 hours light and 8 hours darkness.</p> <p>Dilution water: Source – Aged reconstituted water (>24hrs), with a dissolved content of 90 to 100% saturation at time of use.; Hardness – 130mg/L at test initiation; Analysis - unknown; Water chemistry in test: DO (mg/L) – >40% <100% ; pH – 7.99-8.19; specific conductance 409-553 umhos/cm</p> <p>Test Temperature (C) – 20 +/- 2</p> <p>Element: Immobilization/mortality</p> <p>Test Levels: Control shaken and unshaken, 625, 1500, 2500, 5000, 10000 mg/L.</p>
Results:	48hr- LL50= 7070mg/L 95% confidence Interval 5000 – 10,000 mg/L
Remarks:	Reference Substance: Sodium Chloride Reference substance toxicity – LC50= 4650mg/L 95% confidence Interval 3600- 6000 mg/L.
Conclusions:	
Data Quality:	Reliable with restrictions – Klimisch code 2
Data Quality Remarks:	Study is valid but is reliable with restrictions because it was not performed under GLP.

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References:	48-hour Acute Lethality Test for <i>Daphnia magna</i> on Alox 165 Batch 99491. Beak International test # 9900484-0; Beak International Incorporated, June 2, 1999.
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Acute Toxicity -Invertebrate	
Test Substance:	
Chemical Name	Distillates (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 202
Test Type	Static
GLP (Y/N)	Y
Year (Study Performed)	2004
Species/Strain/Supplier	Daphnia magna
Analytical Monitoring	The concentration and stability of the test material in the test solution was verified by GC analysis at 0 and 48 hours. Analysis of the test solutions at 0 and 48 hours showed measured test concentrations to decline over the duration of the test. Given that the toxicity cannot be attributed to a single component or mixture of components but to the test material as a whole, the results were based on nominal loading rates only.
Exposure Period (unit)	48 hours
Statistical Methods	Maximum-likelihood probit method (Finney 1971)
Remarks field for test conditions	<p>Test Species: Juvenile daphnids less than 24 hours old were produced from laboratory in-house culture.</p> <p>The test material was added to the surface of the reconstituted water via syringe. The reconstituted water was stirred by magnetic stirrers using a stirring rate such that a vortex was formed to give a slight dimple at the water surface. They were stirred for 23 hours and the mixtures were allowed to stand for 1 hour. A wide bore glass tube, covered at one end with parafilm was submerged into the vessel, sealed end down, to a depth of approximately 5 cm from the bottom of the vessel. A length of tygon tubing was inserted into the glass tube and pushed through the parafilm seal. The aqueous phase or water accommodated fraction (WAF) was removed by mid-depth siphoning microscopic inspection of the WAF's showed no micro-dispersion or undissolved test material to be present.</p> <p>Test Conditions: Ten daphnids were placed in each test and control vessel and maintained in a temperature controlled room at 21C with a photoperiod of 16 hours light and 8 hours darkness for a period of 48 hours with 20 minute and dusk transition periods. Each 250 ml test and control vessel contained 200 ml of test material and was covered to reduce</p>

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Results:	evaporation. The definitive test loading rates were 1.0, 1.8, 3.2, 5.6, 10, 18, 32, 56, and 100 mg/l. Duplicate test vessels were used for each test and control group. The daphnids were not individually identified, received no food during exposure and the test vessels were not aerated.
	Dilution water: Source –reconstituted water with a dissolved oxygen concentration approximately the air-saturation value Hardness – The reconstituted water had an approximate theoretical total hardness of 25mg/l as CaCO ₃ ; pH – 7.8 +/- 0.2
	Test Temperature (C) – 21
	Element: Immobilization/mortality
	Test Levels: Control, 1.0, 1.8, 3.2, 5.6, 10, 18, 32, 56, and 100 mg/l
	48hr- EL50= 29 mg/l loading rate WAF with a 95% confidence limit of 23-35 mg/l loading rate WAF. The no observed effect level (NOEL) was 10 mg/l
	Remarks:
Conclusions:	
Data Quality:	Reliable without restrictions– Klimisch code 1
References:	OS164316B; Acute Toxicity to Daphnia magna; Safepharm Laboratories May 26, 2004.

Acute Toxicity - Oral	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 401
Test Type	Acute Oral Toxicity, Single Level
GLP (Y/N)	Y
Year (Study Performed)	1993
Species	Rat
Strain	Sprague-Dawley
Route of Administration	Oral
Dose Levels	5.0 g/kg
Sex and Number/Group	5 male and 5 female
Frequency of Treatment	Animals were given 24hrs to consume test material.
Duration of Test	14 day observation post-treatment
Control Group	No negative control group
Results:	LD50 > 5.0 g/kg
Remarks:	Five male and five female Sprague-Dawley rats weighing 200 to 240 grams were used for this study. The animals were

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	deprived of food but not water overnight prior to dosing. The test article was ground into small pieces and mixed with 4mL of peanut butter and 2 mL of honey. All 10 of the animals consumed the test article within 24hrs. The animals were allowed water and food <u>ad libitum</u> for the 14-day observation period. The rats were observed for any signs of toxicity and mortality throughout the 14-day observation period. Animals were observed frequently on the day of dosing and a careful clinical examination was performed at least once a day. Individual body weights were recorded on the day of dosing, Day 9, and prior to sacrifice. There were no abnormal observations noted throughout the 14-day observation period. No gross abnormalities were observed in the five males or five females at necropsy. 0/10 deaths were observed after 14 days.
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	Summary of Results of acute toxicology study: Batch 57725, Bioresearch Inc., 3/17/93.

Acute Toxicity - Oral	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	Consistent with OECD 401/ Limit test
Test Type	Acute Oral Toxicity
GLP (Y/N)	No
Year (Study Performed)	1969
Species	Unknown
Strain	Rats
Route of Administration	Oral
Dose Levels	5.0 g/kg
Sex and Number/Group	10 males
Frequency of Treatment	Single oral dose
Duration of Test	14-day observation post-treatment
Control Group	No negative control group
Results:	LD50 > 5.0 g/kg
Remarks:	5 g/Kg of test material was administered in warm corn oil via feeding needle. All animals exhibited varying degrees of diarrhea. 0/10 deaths were observed after 14 days.
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	Lawall & Harrison Research Laboratories Inc.; January 29, 1969.

Acute Toxicity - Oral	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized

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CAS#	68603-10-1
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 423
Test Type	Acute Oral Toxicity
GLP (Y/N)	Yes
Year (Study Performed)	2002
Species	Wistar Albino
Strain	Rats
Route of Administration	Oral
Dose Levels	2.0 g/kg
Sex and Number/Group	3 male and 3 females
Frequency of Treatment	Single oral dose
Duration of Test	14-day observation post-treatment
Control Group	No negative control group
Results:	LD50 > 2.0 g/kg
Remarks:	Three healthy male and three healthy female Wistar albino rats were weighing between 200 and 260 grams were dosed orally at 2000mg/kg. Feed was freely available except for 16-20 hours prior to dosing. Water was available at all times. A single dose of the test material was administered orally by syringe and dosing needle. The rats were then observed 1, 2, 3 and 4 hours post dose and once daily for 14 days for mortality, toxicity and pharmacological effects. All body weight changes were normal in 3/3 males and 1/3 females. Two females lost weight during the second week of the observation period. Instances of dyspnea were noted in the females on the day of dosing only. The necropsy results were normal. 0/6 deaths were observed after 14 days.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	MB Research Laboratories; Acute Toxic Class Determination (Oral) for 125U-56; September 24, 2002.

Acute Toxicity - Oral	
Test Substance:	
Chemical Name	Hydrocarbon waxes (petroleum) Oxidized Me ester, Ca salts
CAS#	68603-11-2
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD 401
Test Type	Acute Oral Toxicity
GLP (Y/N)	N
Year (Study Performed)	1980
Species	Sprague Dawley
Strain	Rats
Route of Administration	Oral
Dose Levels	5, 10, and 15 ml/kg

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Sex and Number/Group	5 male and 5 female for each dosage
Frequency of Treatment	Single intubation
Duration of Test	14-day observation post-treatment
Control Group	No negative control group
Results:	LD50 > 15 ml/kg
Remarks:	Ten Sprague Dawley rats (5 male and 5 female) each weighing between 200 and 300 grams, were selected for each dose. The animals were fed commercial rat food diet. Water was available <u>ad libitum</u> . Food was removed 12 to 24 hours before dosage. The sample was fed to unanesthetized animals by oral intubation using a 16 gauge "ball point" needle and syringe. The animals were observed for gross toxicological effects immediately after administration of the sample, after 1 hour, after 4 hours, and once daily for 14 days. The LD50 was calculated using the method of J.T. Litchfield and F. Wilcoxon – "A Simplified Method of Evaluating Dose-Effect Experiments". There were no deaths in any animals at any dose level. The LD50 is greater than 15ml/kg.
Data Quality:	Reliable with restrictions – Klimisch code 2
References:	Alox 165; Acute Oral Toxicity; United States Testing Company, Inc.; 5/2/80.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD Guideline 471
Test Type	Reverse mutation Assay "Ames Test"
GLP (Y/N)	Y
Year (Study Performed)	2003
System of Testing	<i>Salmonella typhimurium</i> TA1535, TA1537, TA98, TA100 and <i>Escherchia coli</i> WP2uvrA
Concentration	0, 0.15, 0.5, 1.5, 5, 15, 50, 150, 500, 1500 and 5000 µg per plate
Metabolic Activation	With and without metabolic activation (rat liver homogenate metabolizing system)
Results:	Non-mutagenic
Remarks:	<i>Salmonella typhimurium</i> strains TA1535, TA1537, TA98, TA100 and <i>Escherchia coli</i> WP2uvrA were treated with the test material using the direct plate incorporation method at five dose levels, in triplicate, both with and without the addition of a rat liver homogenate metabolizing system (10% liver S9 in standard co-factors). The dose range was determined in a preliminary toxicity assay and was 50 to 5000 ug/plate in the first experiment. The experiment was repeated on a separate day using the same dose range as Experiment 1.

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	<p>The test material caused a visible reduction in the growth of the bacterial background lawn in tester strain TA100 (without S9-mix) at the maximum dose level in Experiment 1 only. The test material was, therefore, tested up to the maximum recommended dose level of 5000 ug/plate. No test material precipitate was observed on the plates at any of the doses tested in either the presence or absence of S9-mix.</p> <p>No significant increases in the frequency of revertant colonies were recorded for any of the bacterial strains, with any dose of the test material, either with or without metabolic activation.</p>
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316B: Reverse Mutation Assay "Ames Test" using Salmonella Typhimurium and Escheria Coli.; Safepharm Laboratories October 22, 2003.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	ASTM E1687-98
Test Type	Modified Ames Test
GLP (Y/N)	N
Year (Study Performed)	2000
System of Testing	Salmonella typhimurium TA98
Concentration	0, 6, 12, 18, 24, 30 µL per plate
Metabolic Activation	With metabolic activation
Results:	MI= 0.23
Remarks:	<p>The tester strain S. typhimurium TA 98 was used in this study. Three dimethyl sulfoxide (DMSO) extracts of the test article and one reference oil were tested. The test material was extracted by adding 5 volumes of DMSO to one volume of sample, which was vortexed for 30 seconds every five minutes for 30 minutes at room temperature. The material was centrifuged and the extract was removed. The sample extracts were diluted in DMSO to the appropriate concentration in 60uL dosing aliquots. The sample extracts were tested at 0, 6, 12, 18, 24, and 30, uL per plate. The reference oil was tested at 0, 3, 6, 9, 12, and 15uL per plate. The S-9 was derived from Syrian Golden Hamster liver, prepared by and purchased from Molecular Toxicology Inc. The mean revertants per plate were plotted against volume of DMSO extract for the test articles and reference oil. The data was analyzed using a suitable graphics-statistics program to determine the slope of the dose-response curve which gives</p>

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	the Mutagenicity Index (MI) of the material. Modified Ames Testing of petroleum streams has shown that oils with MI's greater than 1 are likely to be carcinogenic in the mouse skin-painting bioassay, while oils with MI under 1 are not. This material with a MI of 0.23, is not likely to be mutagenic.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS158944: Modified Ames Testing of Fifteen Wax Samples from Lubrizol Corp.; Petro Labs Inc. October 26, 2000.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	ASTM E1687-98
Test Type	Modified Ames Test
GLP (Y/N)	N
Year (Study Performed)	2000
System of Testing	<i>Salmonella typhimurium</i> TA98
Concentration	0, 6, 12, 18, 24, 30 µL per plate
Metabolic Activation	With metabolic activation
Results:	MI= 0.16
Remarks:	The tester strain <i>S. typhimurium</i> , TA 98 was used in this study. Three dimethyl sulfoxide (DMSO) extracts of the test article and one reference oil were tested. The test material was extracted by adding 5 volumes of DMSO to one volume of sample, which was vortexed for 30 seconds every five minutes for 30 minutes at room temperature. The material was centrifuged and the extract was removed. The sample extracts were diluted in DMSO to the appropriate concentration in 60µL dosing aliquots. The sample extracts were tested at 0, 6, 12, 18, 24, and 30, uL per plate. The reference oil was tested at 0, 3, 6, 9, 12, and 15uL per plate. The S-9 was derived from Syrian Golden Hamster liver, prepared by and purchased from Molecular Toxicology Inc. The mean reverents per plate were plotted against volume of DMSO extract for the test articles and reference oil. The data was analyzed using a suitable graphics-statistics program to determine the slope of the dose-response curve, which gives the Mutagenicity Index (MI) for that material. Modified Ames Testing of petroleum streams has shown that oils with MI's greater than 1 are likely to be carcinogenic in the mouse skin-painting bioassay, while oils with MI under 1 are not. This material with a MI of 0.16 is not likely to be mutagenic.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS158948: Modified Ames Testing of Fifteen Wax Samples from Lubrizol Corp.; Petro Labs Inc. October 26, 2000.

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Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD Guideline 471
Test Type	Reverse mutation Assay "Ames Test"
GLP (Y/N)	Y
Year (Study Performed)	2003
System of Testing	<i>Salmonella typhimurium</i> TA1535, TA1537, TA98, TA100 and <i>Escherchia coli</i> WP2uvrA
Concentration	0, 50, 150, 500, 1500 and 5000 µg per plate
Metabolic Activation	With and without metabolic activation (rat liver homogenate metabolizing system)
Results:	Non-mutagenic
Remarks:	<p><i>Salmonella typhimurium</i> strains TA1535, TA1537, TA98, TA100 and <i>Escherchia coli</i> WP2uvrA were treated with the test material using the direct plate incorporation method at five dose levels, in triplicate, both with and without the addition of a rat liver homogenate metabolizing system (10% liver S9 in standard co-factors). The dose range was determined in a preliminary toxicity assay and was 50 to 5000 ug/plate in the first experiment. The experiment was repeated on a separate day using the same dose range as Experiment 1.</p> <p>The test material caused no visible reduction in the growth of the bacterial background lawn at any dose level. The test material was, therefore, tested up to the maximum recommended dose level of 5000 ug/plate. A light, particulate was observed at 5000 ug/plate, this did not prevent scoring of revertant colonies.</p> <p>No significant increases in the frequency of revertant colonies were recorded for any of the bacterial strains, with any dose of the test material, either with or without metabolic activation.</p>
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758BB: Reverse Mutation Assay "Ames Test" using <i>Salmonella Typhimurium</i> and <i>Escheria Coli.</i> ; Safepharm Laboratories October 22, 2003.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Petrolatum, (petroleum), oxidized
CAS#	64743-01-7
Purity	100% commercial product.
Remarks	

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Method:	
Method/Guideline followed	ASTM E1687-98
Test Type	Modified Ames Test
GLP (Y/N)	N
Year (Study Performed)	2000
System of Testing	<i>Salmonella typhimurium</i> TA98
Concentration	0, 12, 24, 36, 48, 60 µL per plate
Metabolic Activation	With metabolic activation
Results:	MI=0
Remarks:	The tester strain <i>S. typhimurium</i> , TA 98 was used in this study. Three dimethyl sulfoxide (DMSO) extracts of the test article and one reference oil were tested. The test material was extracted by adding 5 volumes of DMSO to one volume of sample, which was vortexed for 30 seconds every five minutes for 30 minutes at 70C. The material was centrifuged and the extract was removed. The sample extracts were diluted in DMSO to the appropriate concentration in 60uL dosing aliquots. The sample extracts were tested at 0, 12, 24, 36, 48, and 60, uL per plate. The reference oil was tested at 0, 3, 6, 9, 12, and 15uL per plate. The S-9 was derived from Syrian Golden Hamster liver, prepared by and purchased from Molecular Toxicology Inc. The mean reverents per plate were plotted against volume of DMSO extract for the test articles and the reference oil. The data was analyzed using a suitable graphics-statistics program to determine the slope of the dose-response curve, which gives the Mutagenicity Index (MI) for the material. Modified Ames Testing of petroleum streams has shown that oils with MI's greater than 1 are likely to be carcinogenic in the mouse skin-painting bioassay, while oils with MI under 1 are not. This material with a MI of 0 is not likely to be mutagenic.
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS158941: Modified Ames Testing of Fifteen Wax Samples from Lubrizol Corp.; Petro Labs Inc. October 26, 2000.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD Guideline 473
Test Type	Chromosomal Aberration Test in Human Lymphocytes
GLP (Y/N)	Y
Year (Study Performed)	2004
System of Testing	Human Lymphocytes
Concentration	
Metabolic Activation	With and without metabolic activation (rat liver homogenate metabolizing system)

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Results:	Non-clastogenic
Remarks:	<p>Duplicate cultures of human lymphocytes, treated with the test material, were evaluated for chromosomal aberrations at up to three dose levels, together with the vehicle and positive controls. Four treatment conditions were used for the study, ie. Experiment 1, 4 hours in the presence of an induced rat liver homogenate metabolizing system (S9), at a 2% final concentration with cell harvest after a 20-hour expression period and a 4-hour exposure in the absence of metabolic activation (S9) with a 20 hour expression period. In Experiment 2, the 4-hour exposure with addition of S9 was repeated, whilst in the absence of metabolic activation the exposure time increased to 24 hours.</p> <p>The test material was toxic but did not induce any statistically significant increases in the frequency of cells with aberrations, in either of two separate experiments, using a dose range that included a dose level that induced approximately 50% mitotic inhibition.</p>
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316B: Chromosome Aberration Test in Human Lymphocytes In Vitro. Safepharma Laboratories January 7, 2004.

Invitro Genetic Toxicity	
Test Substance:	
Chemical Name	Hydrocarbon waxes, (petroleum), oxidized
CAS#	64743-00-6
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD Guideline 473
Test Type	Chromosomal Aberration Test in Human Lymphocytes
GLP (Y/N)	Y
Year (Study Performed)	2004
System of Testing	Human Lymphocytes
Concentration	
Metabolic Activation	With and without metabolic activation (rat liver homogenate metabolizing system)
Results:	Non-clastogenic
Remarks:	<p>Duplicate cultures of human lymphocytes, treated with the test material, were evaluated for chromosomal aberrations at up to three dose levels, together with the vehicle and positive controls. Four treatment conditions were used for the study, ie. Experiment 1, 4 hours in the presence of an induced rat liver homogenate metabolizing system (S9), at a 2% final concentration with cell harvest after a 20-hour expression period and a 4-hour exposure in the absence of metabolic activation (S9) with a 20 hour expression period. In Experiment 2, the 4-hour exposure with addition of S9 was</p>

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	<p>repeated, whilst in the absence of metabolic activation the exposure time increased to 24 hours.</p> <p>The test material was toxic but did not induce any statistically significant increases in the frequency of cells with aberration, in either of two separate experiments, using a dose range that included a dose level that induced approximately 50% mitotic inhibition.</p>
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS160758BB: Chromosome Aberration Test in Human Lymphocytes In Vitro. Safepharm Laboratories January 13, 2004.

Reproduction Toxicity	
Test Substance:	
Chemical Name	Distillates, (petroleum), oxidized light
CAS#	64742-98-9
Purity	100% commercial product.
Remarks	
Method:	
Method/Guideline followed	OECD Guideline 422
Test Type	Oral gavage combined repeat dose toxicity study with reproduction/developmental toxicity screening test in rats
GLP (Y/N)	Y
Year (Study Performed)	2005
Species	Rat
Strain	Sprague-Dawley Crl:CD ® (SD) IGS BR
Sex	10 male and 10 female per group
Route of Administration	Oral gavage
Frequency of Treatment	7 days/week
Dose	0, 100, 300, 1000 mg/kg/day administered in a dose volume of 4ml/kg
Control group	Concurrent with Polyethylene glycol
Statistical Methods	Haematological, blood chemical, organ weight, weekly bodyweight gain, litter weights, offspring bodyweights and quantitative functional performance data were assessed for dose response relationships by linear regression analysis, followed by one way analysis of variance (ANOVA) incorporating Levene's test for homogeneity of variance. Where variations were shown to be homogenous, pair wise comparisons were conducted using Dunnett's test. Where Levene's test showed unequal variances the data were analyzed using non-parametric methods: Kruskal-Wallis ANOVA and Mann-Whitney 'U' test. The non-parametric methods were also used to analyze implantation loss, offspring sex ratio and landmark developmental markers.
Remarks	Prior to the start of treatment and once weekly, all animals were observed for signs of functional/behavioral toxicity. On the day prior to paring (Day 14), blood samples were taken from 5 males and five females, randomly selected from each dose group and analyzed for haematological and blood

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	chemical assessment. On day 15, all animals were paired on a 1 male to 1 female basis within each dose group for a maximum of fourteen days. Following evidence of mating the males were returned to their cages and females were transferred to individual cages. At the completion of mating, five selected males per dose group were evaluated for function/sensory response to various stimuli. Pregnant females were allowed to give birth and maintain their offspring until day 4 post partum. Evaluation of each litter size, litter weight, mean pup weight, clinical observations and landmark developmental signs were also performed. At day 4 post partum, five females per dose were evaluated for functional/sensory responses to various stimuli. The male animals were examined macroscopically at the completion of female gestation and lactation phases while the females and offspring were examined at Day 5 post partum.
Results:	
Reproductive and Developmental NOEL	1000 mg/kg/day
Repeated Dose NOAEL	1000 mg/kg/day
Remarks:	<p>Survival: There were no treatment related deaths. One female treated with 1000 mg/kg/day was sacrificed in extremis due to dystocia. Clinical Observations: Increased salivation was detected up to one hour after dosing from Day 3 onwards for animals of either sex treated with 1000 mg/kg/day. Transient incidents of noisy respiration were also observed at this dose level. Functional observation battery: There were no treatment related effects detected. Behavioral assessment: There were isolated incidents of noisy respiration detected at 1000 mg/kg/day during week 1 and week 6 assessments. Bodyweights and food consumption: There were no adverse effects on body weight or food consumption for males throughout the study or for females throughout the maturation, gestation or lactation phases of the study. Hematology: The statistically significant reduction ($p < 0.5$) in haemoglobin levels detected for females treated with 1000 mg/kg/day was minimal. In the absence of any other changes to suggest a haemolytic or haematological effect and in the absence of histopathological correlates this was considered to have arisen fortuitously. Blood chemistry: There were statistically significant increases in plasma albumin. Total protein and creatinine and reduced chloride levels for females treated with 1000 mg/kg/day. These effects were not considered related to treat due to the absence of supporting data to suggest test material toxicity. Minimal ($p < 0.05$) elevated creatinine levels were detected for females treated with 300 mg/kg/day however in the absence of any other biological or histopathological effects it was considered to have arisen incidentally. Reproductive screening: There were no significant intergroup differences detected for mating, fertility or pregnancy. There were no treatment-related effects on litter size, viability, growth or development. Pathology:</p>

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	<p>There were no treatment related macroscopic effects detected for adults or offspring. Treatment related microscopic changes were detected in the kidneys, thyroid glands and forestomach. Males at all dose levels showed globular accumulation of eosinophilic material in the kidneys. These effects are considered to be a consequence of protein accumulation exclusive to the male rat. Marginal follicular cell hypertrophy of the thyroid was detected for animals of either sex treated with 1000 mg/kg/day and for males treated with 300 mg/kg/day. Minimal acanthosis, which was occasionally associated with hyperkeratosis was detected in the stomach of animals of either sex treated with 1000 mg/kg/day. The changes detected in the thyroid glands and forestomach were considered to be minimal and adaptive in nature.</p>
Data Quality:	Reliable without restrictions – Klimisch code 1
References:	OS164316B: Oral Gavage Combined Repeat Dose Toxicity Study with Reproduction/Developmental Toxicity Screening Test in the Rat. September 15, 2005.